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See Article page 1626.

Commentary: Perceived versus real threat…and the nuclear option

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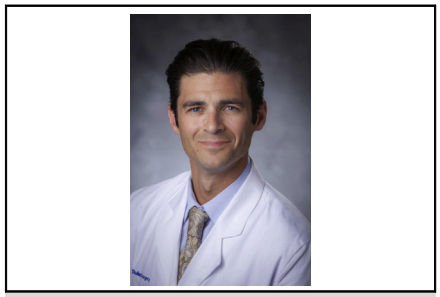

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CENTRAL MESSAGE

Isolated lung perfusion. It can be done. Should it be done?

In this manuscript, the group at the University of Toronto has demonstrated how their unparalleled expertise in the field of ex vivo lung perfusion may have benefits beyond lung transplantation.[1] The rigor with which this current study was produced does indeed provide a blueprint for a potential phase I study of isolated lung perfusion for the treatment of colorectal metastases.

Again, it is very hard to argue with their methodology and technique, as this group is widely recognized as the world experts in ex vivo lung perfusion. In addition, it is only natural that they would consider the application of this technology to the field of thoracic oncology, where pulmonary mastectomies are commonly performed for a variety of histologies. Furthermore, the precedent for isolated organ perfusion exists in the treatment of metastatic disease to the liver and limb.[2,3]

I'll admit on first blush such an approach to pulmonary metastases seems appealing despite the morbidity of the procedure (as it's currently designed) and the real potential for delayed pulmonary toxicity. The question I keep coming back to, however, is who would want or need such an operation? I would surmise that the ideal candidate would be an individual with unilateral lung metastases that are either too numerous, too large, or in unfavorable anatomic locations that standard surgical resection is not possible. This would likely make up a small subset of patients, a group that would be further reduced in size by fact that many with lung disease would also have other sites of metastatic disease.

Another theoretical point to consider is the perceived threat versus the real threat of lung metastases. In other words, how life-limiting are lung metastases that we would need a procedure like isolated lung perfusion. For instance, most would agree that lung metastases, unlike implants in other organs, ie, bone or brain, are rather indolent lesions that cause no pain and rarely negatively impact pulmonary function. In addition, we have debated for years what, if any, survival benefit is conferred from the conventional removal of these lesions.

In sum, the importance of accurately assessing whether a perceived threat is a real threat is that many times the

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decisions made at this juncture can have significant implications. To put this in a real-world context, consider US policy toward nuclear weapons at the dawn of the Cold War. We perceived a real threat from Soviet proliferation. Thus, by the end of 1962, we had 27,000 nuclear warheads. The Soviets? Just 3300.[4] In the end, we had created an overwhelming stockpile of weapons that we could not consciously use or dispose of—the danger of overestimating a perceived threat. Isolated lung perfusion looks like the ultimate weapon against lung metastases. But is it a procedure that is more likely to cause more harm than good? Certainly, it will eradicate these lesions, but like the aforementioned weapons, to what end and at what cost?

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